

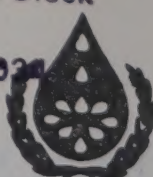
FROM THE UNICEF WATER FRONT:

ANYTHING THAT WORKS; WORKS:

HUMAN RESOURCES DEVELOPMENT



IWRA AWARD



1981-1990

IDWSSD



FROM THE UNICEF
WATERFRONT

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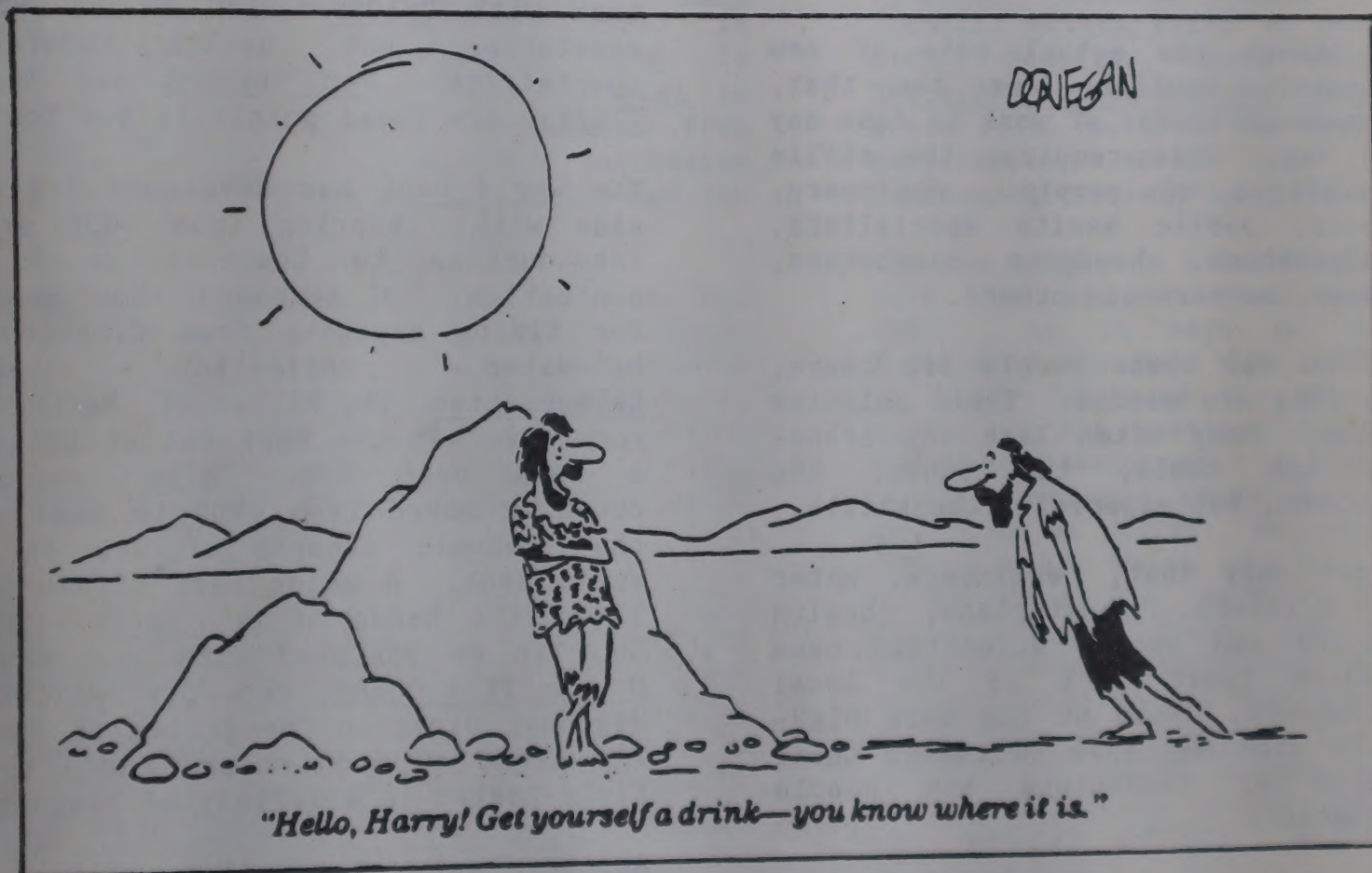
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WATERFRONT No. 33

March 1986

WET/066/86

ANYTHING THAT WORKS, WORKS: HUMAN RESOURCES DEVELOPMENT



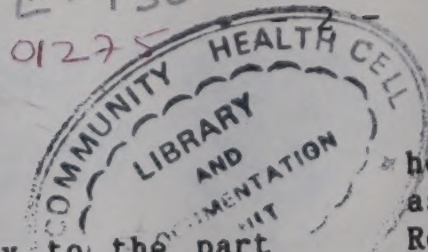
There was that famous train, the Chattanooga Choo-Choo which for obvious reasons also was called the Two-to-Two Too-Too. The Who's Who in WHO and other wholehearted partners in the Water Decade business have a similarity to that train. Perhaps one should liken them more specifically to the locomotive. Or so it should be.*

* Ce qui pour nos lecteurs et lectrices françaises nous fait rappeler le traité fameux sur les relations humaines, intitulé "Zazie dans le Métro", surtout la "job description" de son oncle, le tonton, qui était une tata avec son tutu ...

continued on page 2

Editorial correspondence and document requests to Ms. Doreen Canas, UNICEF Water and Environmental Sanitation Team (WET), UNICEF A-6M, 866 United Nations Plaza, New York, NY 10017. WET Staff: Martin G. Beyer, Doreen Canas, Joseph Christmas, Per Engebak, Muriel Glasgow, Margaret Karp, Ma Yansheng, Ma Yu-Qin, Therese Tchimouendji. Telephone numbers: USA (212) 415-8533 through 415-8541. Telex: 127895 (Western Union International), Cables: UNICEF New York. Visitors: 866 UN Plaza, 6th Floor, New York.

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(continued from page 1)



This applies particularly to the part of the whole assembly called Human Resources Development: Organization and development of the human skills to do the big work of the Decade. If the original targets to provide water supply and sanitation to everybody by 1990 were to be fulfilled, it would mean new water supply installations to 500,000 people per day.

Even though the actual rate of new construction would be lower than that, a tremendous amount of work is done day after day. This requires the skills of millions of people: engineers, teachers, public health specialists, administrators, handpump caretakers, children, mothers and others.

Far from all these people are there, where they are needed. Their salaries are low. They often lack the transport, the tools, the funds, the management, but especially the skills.

And not only that, engineers, water well drillers, sanitarians, health educators and social scientists need to adapt their work to the local requirements. Some of the more high-falutin ones may have to change their concepts of technology and people considerably.

Human Resources Development is the keystone in any development. Therefore its care and maintenance has made it subject in the international world to the attention of a special Task Force of the Decade Steering Committee. Our hopes are that out of this Force will spring a co-ordinated and well-publicized effort to guide and support people all over the world in their training.

A lead role is with WHO. In Geneva, Neil Carefoot keeps HRD together, based on his unique experience of training water people in Latin America and the Caribbean. The WHO environmental

health people around the world have HRD as one of their main inputs. The Regional Offices of WHO are very active, e.g., with Marilyn Rice (health education) and Horst Otterstaetter (HRD/Training Methods) at PAHO in Washington, D.C.

Training especially for water well drilling, handpump installation, latrine construction, village sanitation and health education is a prime task with UNICEF's 130 or so water, sanitation and health education specialists. Per Engebak and Muriel Glasgow are focal points in New York.

The World Bank has developed training aids with financing from UNDP as an introduction to low-cost water and sanitation: slide-sound show modules for fixing anything from finances to rainwater collection. John Kalbermatten, the Pillar of the Decade, recently left the Bank but still keeps a hand over HRD. Mike Potashnik recently moved from UNDP to deal with the economic aspects of HRD at the World Bank. A major part of the work is in the hands of Dr. Letitia Obeng (not to be confused with her mother, Dr. Letitia Obeng, recently retired as Regional Director for Africa of UNEP). The about 40 modules are ready to be field-tested in a variety of languages.

Another set of similar slide-sound materials is the responsibility of economist/engineer Klas Ringskog of the World Bank's Economic Development Institute. All this is supplemented by IDRC (the International Development Research Centre) and CIDA of Canada with films for introducing the ideas in an easy-to-understand way. Just watch the way the glowing fecal contamination insidiously spreads through water, soil and dirty hands in an animated part of the IDRC film, "Prescription for Health". Donald Sharp is the moving force of IDRC.

Two other Canadians contribute strongly, Michael (Mike) Mc Garry and

Brian Grover, consultants to the World Bank. So does John Austin of the United States Agency for International Development (USAID). Going on with the Americas, there is the Pan-American Health Organization Centre for Sanitary Engineering in Lima, Peru: CEPIS, headed by Alberto Flores and its Brazilian counterpart, CETESB in Sao Paulo.

Across the Pacific, there is the Asia Institute of Technology (AIT) in Bangkok, the WHO Centre, PEPAS, in Kuala Lumpur, with Somnuek Unakul as its Director (recently moved in from WHO in Geneva). National institutes include NEERI in Nagpur, India and the Indonesian one in Bandung.

On the African continent we have the CIEH, Inter-African Centre for Water Research and the neighboring engineering school in Ouagadougou, Burkina Faso. Sudan hosts the Training Centre for Water Technicians at Wad Magboul (including training of water well drillers).

Europe is the base of ILO with John Wallace in charge of water-related issues of - especially - vocational training. The International Reference Centres in The Hague (IRC) headed by Hans van Damme, and Duebendorf, Switzerland (IRCWD) with Roland Schertenleib have an important

function. France has its CEFIGRE under Jean-Paul Mounier in Sophia Antipolis on the Côte d'Azur and the Fondation de L'Eau in Limoges. Both are intensely involved in training, both French- and English-speaking.

Then there is the host of universities: Dakar, Addis Ababa, Barcelona, London, Linköping, Tampere, Cairo, Beirut, Damascus, Lahore, Hyderabad, Dhaka, Rangoon, Ottawa, North Carolina, Cornell, Wright State in Ohio, Buenos Aires, Medellin, among many others. Voluntary organizations play a very great role, such as the Kenya Women's Association, AFPRO and the Water Development Society in India.

You see, there is a lot done. What we need now, is more knowledge of each other. As it says in the famous limerick: Who does what with what and to whom? We need the diversity and spread of the institutions for Human Resources Development. A number of the people mentioned above can help you, so can we at UNICEF. We need, though, also a place which can tell us where to go for advice, methods, materials, funds. Most likely, the effective Human Resources Development information centres would be the WHO, the IRC, the World Bank and ILO in a closely knit network. At UNICEF we are, as always, at your disposal, in line with one of our immortal maxims: "Anything that works, works".

MISS PEACH



WHO "Human Resources Development Handbook"

The Human Resources Development (HRD) handbook is intended for training officers and personnel officers, including top level managers in water supply and sanitation programmes. It stresses the three components of the HRD process - planning, training and management. It is a companion document to the Basic Strategy on Human Resources Development which was published by WHO in 1982 for the Water Decade Steering Committee. The handbook shows how an integrated approach can link training with organizational change, career development, planning and management systems. Learn from it how to impart your skills and keep them working for a good cause. French, Spanish and Turkish translations are planned. Available through WHO, Geneva. Edited by Neil Carefoot, Chief of the Human Resources Development Branch of WHO Environmental Health Division.

New manual for village trainers in French speaking areas

The Interafrican Committee for Water Resources Studies (CIEH), BP 369, Ouagadougou, Republic of Burkina Faso, recently published a manual in French for training of village promoters in the use of water resources for village water supply. There are three small volumes on how to manage the water resources, how to maintain a water point in good shape and how to properly use a handpump. Effective manuals for operation and maintenance with a clear disposition, good illustrations including some very nice graphics.

Middlesex Polytechnic Training Courses and Programmes in Water, Waste Water and Sanitation

Middlesex Polytechnic is open for all sexes. Short courses in Water, Waste Water and Sanitation during February-

June and June-October, in association with the British Council as part of the U.K. contribution to the Water Decade. Trainees are supervisors, instructors, senior operators and technicians. Middlesex also offers courses in Basic Organization Management Skills and Training of Trainers. Furthermore, a course for diploma in Water Supply and Public Health Engineering during September-December. On top of that a post-graduate diploma in Water Quality Control and Management (January-March) and another post-graduate diploma in Management of Water Resources (April-July). Write to: Dr. S.K. Dutta, Middlesex Polytechnic, Queensway, Enfield, Middlesex EN3 4S, United Kingdom. Telephone 01-804 8131 ext 253. Telex: 8954762.

Training component for community development

Training institutions around the world are slowly catching up with the need for proper training in community development. The latest addition to such institutions, we found to be the Ilaw International Center, Bool, Tagbilaran City in the Philippines. Their next courses will be 8-29 August 1986 and 7-28 August 1987. Write to: Mr. Nestor M. Pestelos, Resident Director, Ilaw International Center, P.O. Box 25, Bool, Tagbilaran City, Bohol, Philippines, Tel: 24-82.

The Australian Drillers Guide for anywhere: Well, well, well!

One of the best and universally most useful texts for training of water well drillers, is The Australian Drillers Guide with over 1,500 pages of information, technical data and illustrations for both trainees and experienced drillers, crew supervisors, employers and potential owners or operators. The five well illustrated, very clear and even amusing volumes deal with drilling resources, mechanics for drillers,

drilling the hole, results from drillings and managing drilling operations. For further information contact: The Australian Drilling Industry, Training Committee Limited (Drilling Training Unit), P.O. Box 215, Gordon, N.S.W. 2072, Australia. Telephone: (02) 887-1134 or (02) 88-3834. Telex: AA70842 (ERNEX)

Post-graduate course in water supply and sanitation in Finland

The 1984-1986 post-graduate course in water supply and sanitation is in full swing. Nevertheless, we would like to bring to your attention these complete courses ranging from advanced hydrology over urban and regional planning to groundwater and wells over to management and leadership for engineers from developing countries.

This all is taking place at Tampere University of Technology (TUT), Tieteenkatu 21, Hervanta, Tampere. Postal Address: P.O. Box 527, SF-33101 Tampere 10, Finland, Tel 358-(931)-162111, Telex: 22-313 ttctr-sf. - Ensin oli mettä ja sitten oli vettä ja sitten oli Kohisevan Koski ... (From Kaksipa poikaa Kurikasta, a well-known Finnish song about water.)

Water resources courses in Spain

The Instituto de Hidrología, the Escuela de Hidrología y Recursos Hidráulicos, the Asociación Internacional de Técnicos y Expertos en Ciencias del Agua (A.I.C.A.) and the Chair of Sanitary Engineering of the Engineering Faculty (E.T.S. Ingenieros de Caminos, Canales y Puertos) of Madrid, organize a series of courses, longer and shorter, in hydrology, water resources management and technologies, including water supply and sanitation. Write to: Instituto de Hidrología, Escuela de Hidrología y Recursos Hidráulicos, Cursos A.I.C.A., Apartado de Correos 19.131, Madrid, Spain

Interuniversity postgraduate programme in hydrology: Brussels

A formal postgraduate course in hydrology over one or two years is offered by the Belgian National Committee for the International Hydrological Programme and UNESCO. This is held at the Faculty of Applied Sciences, Free University, Brussels, and supported by the Universities of Antwerp, Ghent and Leuven. Courses start September 1st each year. English is the medium of instruction. The level required for entering the course is Bachelor of Science or Engineering. Applications are to be sent not later than February 1st to Prof. Dr. ir. A. Van der Beken, Director of the Programme, Laboratory of Hydrology, Vrije Universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium. Telex 20064 VUBHYD-B.

The basic course and field training is in hydrology during the first year. The second year leading to a Master's Degree includes optional courses in either surface water hydrology, groundwater hydrology or water pollution control.

New international health programme at New York Medical College

At the many medical colleges and faculties around the world, there are still relatively few programmes dealing with international health and the health problems of the developing countries. In the United States, we believe, there are only three or four such programmes available for the moment. These are extremely helpful for people who want to go into administrative, supervisory and research positions in government agencies, international and voluntary health agencies, academic institutions and hospitals and other health facilities. The latest addition to this types of programmes is by New York Medical College, located just 30

miles north of Manhattan, the heart of New York City.

This programme offers a Master of Public Health and a Master of Science Degree in International Health. It concentrates on health promotion and disease prevention through primary health care in different population groups around the world. Strong emphasis is on the application of traditional and modern epidemiological approaches towards health promotion and the development of communicable and chronic disease prevention. The programme is flexible and can be tailored to the individual needs of students.

For information, contact:

Dr. Ravinder Mamtani
Assistant Professor, Director,
International Health Program
Department of Community and
Preventive Medicine
Munger Pavillion
New York Medical College
Valhalla, New York 10595

You can also call Ms. Ida Varamo or Harriet Pfeifer at 914-993-4250.

For UNICEF buffs it may be of interest to learn that our long-standing Senior Nutrition and Adviser, Dr. Lester (Les) Teply forms part of the teaching staff. Martin Beyer of WET, New York, now and then heads a seminar there on water, sanitation and the mechanics of world-wide action in this field.

Audiovisuals on water supply and sanitation: Will you help, please?

BLAT stands for the British Life Assurance Trust for Health Education. Their BLAT Centre for Health Medical Education is in BMA House, Tavistock Square, London WC1H 9JP, United Kingdom, Telephone: 01-388-7976. This is a WHO Collaborating Centre for

Health Manpower Development, registered under the Charities Act with His Royal Highness the Duke of Gloucester as its patron. They recently issued a fervent plea:

Following the favourable reception of BLAT's publication Food Safety: An International Sourcelist of Audiovisual Materials (1982), we have been requested by the World Health Organization to prepare a similar listing of audiovisuals pertaining to water supply, clean water and sewage disposal, with an emphasis on rural areas in developing countries.

In order that our list is as comprehensive as possible, we would like to include details of any relevant audiovisuals which are currently available from you for purchase, hire or loan. These would include: video-cassettes; videodiscs; audiocassettes; slides; tape-slide programmes; OHP transparencies; posters.

Information supplied should, ideally, include details of title, type of material; running time of programme; number of frames/slides; intended audience level; date of production; cost (hire or purchase); availability (e.g., is the programme restricted to professional audiences only? Can it be supplied to overseas addresses if on hire or loan? Will approval copies be sent?); languages available; accompanying literature and a brief synopsis. If it is not possible to supply such full details, could you please send a copy of your latest catalogues listing programmes on these topics.

We should be grateful if you would forward the addresses of any other organisations known to you which may have audiovisual materials relevant to the project.

Their deadline was 31 December 1985, but no doubt any additional material would be welcomed by them.

UNICEF Programme Manual on Water and Sanitation now in draft

The long-awaited UNICEF Programme Manual on Water Supply and Sanitation now has progressed to a still somewhat rough draft for further editing, before it will be sent out to a greater number of colleagues in the field and in other organizations for review before finalizing.

A very limited edition has been sent out, since it is felt that some information contained therein, including reference lists of literature and useful addresses (akin to the WASH Information Roster mentioned under "Organisation" in the back pages of this issue of WATERFRONT) might be helpful already at this stage.

THE ENVIRONMENT AND THE WATER RESOURCES

Our planet - the environment of the child

The more we travel around the world, the more we are terrified by the deterioration of the ecology. This definitely no longer is a concern just for disappearing rare species of pandas or frogs. We see all too clearly the vicious cycle of overpopulation, cutting down of the forests, over-cultivation and impoverishing of new soils, overgrazing by uncontrolled multitudes of cattle, sheep and goats, and the overpumping of scarce groundwater resources. All this contributes to the dismal picture of entire villages sliding down into the valleys of the Himalayas in Pakistan, northern India, Nepal and Bhutan.

Another symptom is the massive exodus from the country-side in many South American countries into the ever-

growing cities with their tremendous slums.

Several of us at UNICEF Headquarters are right now with colleagues mainly from UNESCO, UNEP and FAO, looking closely into what presently is being done for environmental education all over the world. With our very small resources, we do not quite yet know, how UNICEF could contribute. Nevertheless, it seems that one of the major needs is for intensifying the motivation and education in both rural and urban communities.

Already now, albeit in bits and pieces, quite a deal of action is going on on a country by country basis. One interesting line is that of providing teachers and pupils of primary and secondary schools with assistance for curricula and teaching materials on their own environment.

One of the most successful such activities is in the form of a colourful magazine, presently published in Kenya and Uganda, called the "Pied Crow". It is issued every two months in a handy 16-page format as an African Wildlife Foundation Project, originally funded by CARE in Kenya and Uganda. In Uganda, UNICEF now takes part in the funding. We understand that there are plans for UNICEF to co-fund similar efforts in Indonesia and Honduras. The contents are worked out in each country, taking into account the variations of the environment and local practices and attitudes.

The Pied Crow is happy to give you more information: Write to :

Pied Crow's Environment Special
Magazine
P.O. Box 48177
Nairobi
Kenya

(See following page for illustration from a recent Pied Crow's magazine)

BILHARZIA

THE DEADLY WORM



John and his friends like to play in their local wetland, a pond near their school. After school, John would go with William to swim in the pond.



The problem was that their pond had become full of Bilharzia because people around the area were urinating and defecating in, or near, the water.



Both William and John became very sick after swimming in the pond, and had to be taken to a clinic. They had Bilharzia.

① THE BILHARZIA EGG ENTERS

THE WATER THROUGH HUMAN WASTE ...

②

...AND THE EGG GROWS INTO A WORM.

THE WORM THEN FINDS A SNAILSHELL IN WHICH TO LIVE. IT STAYS THERE UNTIL IT IS FULLY-GROWN.

③ THE

FULLY-GROWN WORM THEN LEAVES THE SHELL, FINDS A HUMAN VICTIM → AND ENTERS THE BODY THROUGH CUTS OR BY DRILLING (SMALL HOLES) INTO THE BODY.

④

THE WORM THEN ENTERS THE BLOOD AND LAYS ITS EGGS IN THE

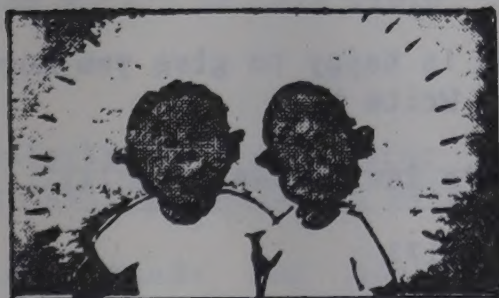
PERSON'S BODY. THE PERSON BECOMES VERY SICK.



⑤ THE WORM AND THE EGGS CAN ONLY

RETURN TO THE WATER THROUGH HUMAN WASTE. THE

CYCLE THEN BEGINS AGAIN.



William and John were cured of Bilharzia, but only after a long recovery time. They will avoid catching Bilharzia again and work hard to ensure friends, and their community use latrines for human waste and not wetlands.

If people use proper latrines, then Bilharzia worm cannot continue its life cycle. Bilharzia cannot live in wetlands unless you put it there.

Ecologists blowing the whistle

PERMANENT GLOBAL WATER SHORTAGE FORESEEN

By PHILIP SHABECOFF
Special to The New York Times

WASHINGTON, SEPT. 21 — Conservation and efficient use of existing supplies will be the only realistic answers to what is expected to be a permanent global water shortage, according to a new study issued today by the World-watch Institute.

The institute, an organization based in Washington, that does research on issues involving resources, found that the world's existing sources of water for drinking, agriculture and industry are approaching their limits.

It also found that such traditional ways of expanding available water supplies as building dams, reservoirs and canals can no longer provide satisfactory solutions in much of the world.

"Pervasive depletion and overuse of water supplies, the high capital cost of new large water projects, rising pumping costs and worsening ecological damage call for a shift in the way water is valued, used and managed," according to the study, which was written by Sandra Postal of the institute.

It found that future needs for water for drinking, agriculture and industry would have to be met through more productive, efficient and innovative uses of existing supplies, rather than by expanding supplies through construction projects that would require large amounts of capital and damage the environment.

"Only by managing water demand rather than ceaselessly striving to meet it, is there hope for a truly secure and sustainable water future," according to the study, which is titled "Conserving Water: The Untapped Alternative."

The severe drought in Africa, which has brought hunger and death on a wide scale in Ethiopia and other countries, "is but a prelude of things to come," the study warned. According to water planners around the world, it said, supplies will fall short in affluent as well as developing countries within the next 20 years.

"Today's water institutions - the policies and laws, government agencies and planned and engineering practices that shape patterns of water use - are steeped in a supply-side management philosophy no longer appropriate to solving today's water problems," according to the study.

It maintained that "aquifer depletion, falling water tables, and stream-flow diminished to ecologically damaged levels are increasingly widespread. Though the conventional approach of continuously expanding supplies may work when water is abundant, it is not well suited for an era of growing scarcity, damage to the environment and capital constraints."

Instead, it said, water must be managed so that the benefit from each gallon is increased and so that populations and economies can expand without increasing their demands for water. Perhaps the most important area for increasing the efficiency of water use, it said, is in agriculture, where it said wasteful irrigation techniques are rapidly depleting resources in major crop areas of the United States, the Soviet Union, China and other countries.

In some areas, including the United States, conservation techniques such as drip irrigation, which conserves water by slowly feeding it into the soil, are gaining acceptance. Other techniques include recycling agricultural water, lining irrigation channels to prevent leakage, and improved techniques to increase crop yields without using more water.

Recycling industrial water and what it called modest efficiency standards for household taps and appliances could also produce enormous water savings, the study contended.

"The transition to a water-efficient economy will not be easy or painless," the report said. "But it has begun and should be fostered," the study said. "With the technologies and methods now available," it added, "even modest expenditures on conservation and efficiency could make unnecessary many of the inordinately expensive, ecologically disruptive water projects that have dominated water planning agencies for decades."

Water and the city

This 56-page book by UNESCO, Paris (1984), has Prof. Gunnar Lindh of the University of Lund, Sweden, as its author.

It is an excellent overview of the problems of the ever-growing cities and a summary of the research and development of water resources for the sprawling urban communities, especially during the last ten years. Easy reading, poignant facts, your and our survival among skyscrapers and adobe agglomerations.

Groundwater in hard rocks - the hard facts

Among the driest areas in the world are those with the hardest rocks under them. A problem which we have been trying to combat for many years. The greatest difficulties but also some of the most spectacular successes through new geological insights and the technological revolution some 20 years ago with high-speed pneumatic and hydraulic drill rigs and the new generation of hand pumps. This book is a must.

Read all about it: E. Norrison (Editor): Groundwater in hard rock, UNESCO, Paris, France. 1984, 228pp., ISBN 92-3-101980-5.

Water Resources - The debate

Book from France contributes to the discussion on water problems in Europe, especially in France, and in the Third World: L'Eau - Quels Enjeux pour les Sociétés Rurales? written by a group of engineers, social scientists and medical workers. Edition - L'Harmattan, 7 rue de l'Ecole Polytechnique, 75005 Paris, France.

THE NEW YORK TIMES

SUNDAY, SEPTEMBER 22, 1985

Weevil whips water weeds

Salvinia is one of the world's worst water weeds, infesting rivers in the Pacific and Indian Ocean area. In Papua New Guinea, Australian and United Nations scientists have achieved a major breakthrough in controlling an infestation of this weed.

The Minister for Science and Technology of Australia, Mr. Barry O. Jones, last year stated that a weevil imported from Brazil by an Australian Commonwealth Scientific and Industrial Research Organization (CSCRO) had cleared salvinia from most of the Sepik river area. Another salvinia control project is about starting up in Sri Lanka.

ELC: Environmental Liaison Centre in Nairobi - Forum for NGOs

Environmental Liaison Centre (The P.O. 72461, Nairobi, Kenya, Tel. 24 770, Telex 23240 ENVICENTC) has as its objectives to strengthen NGOs working in the field of environment, to build links between environmental NGOs around the world and to facilitate the NGO participation in the work of UNEP and the UN Centre for Human Settlements (HABITAT). Among their services, they also have a small grants fund for third world NGOs with contributions of US\$ 100 - US\$ 5,000 for each project. ELC presently focuses on deforestation/afforestation, water management with emphasis on dams, energy and sustainable agriculture.

Fresh water dampens libido

Ephim Shluger, our urbane urban specialist in New York, who worked many years with the favelas of Rio de Janeiro, is speaking of the importance of family planning/family spacing in our GOBI/3F strategies. He found this piece of information (during his recent stay in Guatemala) which we thought might interest you:

... "An anthropologist had been studying an Indian village near Lake Atitlan. One day he was stumped by a problem that had come up in his statistics. The birth rate in the village had mysteriously dropped soon after 1965. He knew of no family planning programs, no major outbreaks of disease, nor any large emigration. People just suddenly began having fewer children.

A couple of weeks later, he had figured out why. That year the town finished its potable water project, with spigots in every home. The teen-age girls no longer had any excuse to walk across town to the village well". (in "The Highland Maya" by Roland and Roger Bunch, Josten Publications. 1977, California).

ORT - WATERFRONT straightened out

In the August 1985 edition of WATERFRONT we published an article on the use of solar radiation to disinfect water.

We need to clarify some of the points made about the use of ORT, so we thought it useful to give a clearer description of "home-prepared solutions" for oral rehydration.

Roger Goodall, our ORT specialist in New York says:

- When a child suffers an acute attack of diarrhoea, he immediately starts to lose both water and electrolytes (certain minerals) which if allowed to continue unchecked will result in dehydration - in severe cases this in turn can lead to coma and death.

- In the majority of cases the parents first response, when a child has an attack of diarrhoea, is to give increased fluids, breastmilk or

semi-solid food, this can PREVENT dehydration occurring. The best fluid to give contains either sugar (sucrose) and common salt in water - in the proportions of 4 percent sugar and 0.5 percent salt (i.e., 8 teaspoons of sugar and 1 level teaspoon of salt in a litre of clean water) - the resulting solution should taste not more salty than tears - or alternatively you can give a starchy fluid such as rice congee or carrot soup with a little added salt.

These home-prepared solutions are ideal to use to PREVENT dehydration, but if dehydration does occur, as shown by the skin patch test, dry mouth, sunken eyes and fontanelle, then packet ORS should be given for TREATMENT of this potentially dangerous condition.

The cleanest available drinking water should be used and care taken to ensure that the solution is not contaminated during use, although there is little or no advantage to boiling the water, as within a few hours the bacterial count will have risen to the same level as without boiling.

It should be noted that citric acid, or orange or lemon juice should NEVER, NEVER be added to the oral rehydration solution, because infants in particular are prone to acidosis, so adding extra acid can be dangerous. Dehydrated children like the taste of unflavoured ORS - even if their mothers may not! - so the addition of flavouring is not necessary.

(Also see the reference: "The Management of Diarrhoea and Use of Oral Rehydration Therapy - A Joint WHO/UNICEF Statement, 1983".)

Thanks, Roger, for the clarification. And hark, ye children!

Sweet Secret of Survival on Little Water

WATER is vital to all life on earth, but some plants and animals can survive extremes of long-term dehydration.

How? The answer, according to scientists at the University of California at Davis, may be sugar.

Dr. John H. Crowe and Dr. Lois M. Crowe, a husband and wife research team at the university, found that a natural sugar called trehalose protects vital cell membranes from damage during dehydration.

The studies focused on small nematodes, known as roundworms, that have the capacity to withstand virtually complete dehydration. The research team found that the nematodes will only survive if the drying process is slow.

During that drying-out period the roundworms make large amounts of trehalose.

Further studies of muscle tissue of lobsters showed that the sugar is more effective than anything else in protecting the cell membranes against dehydration.

The discovery has provided the first explanation of how a wide range of plants and animals can survive indefinitely without water, according to the National Science Foundation, sponsor of the research.

The foundation said the discovery might lead to new ways of preserving food and drugs for human consumption and perhaps better long-term storage of cells, tissues and organs that need to be preserved for transplants.

Extreme tolerance to dehydration is found in the spores of some bacteria and fungi and in the dormant stages of many small animals, including the roundworms.

Many such life forms can survive decades of dehydration in a seemingly lifeless state and yet resume normal living when water again becomes available.

"High concentrations of trehalose exist in many of these organisms and may thus be a universal protectant for drought resistance," Dr. John Crowe said.

THE WATERFRONT GOURMET OUR KITCHEN KORNER

Pond dynamics/Aquaculture: A new newsletter - "Aqua News"

Fish culture and the growing of other organisms in water ponds means a major contribution to food production and improved nutrition of many communities. We just discovered a newsletter, dealing with this particular question, from the Hatfield Marine Science Centre, Oregon State University, Newport, OR 97365, U.S.A. It looks like being free of charge. And it is quite a Centre for research and development on how to grow your own Tilapia bigger and better.

New booklet on Dry Season Gardening

A little water goes a long way to get nutritious and well-tasting plants growing. The surface water drained from handpump sites may be quite sufficient to cultivate small plots for fruits and vegetables like papaya or tomatoes that would help keep children strong and healthy. Paul Sommers, the UNICEF Family Food Gardener, has now published a new book on Dry Season Gardening for Improving Child Nutrition. 48 nicely illustrated practical pages, available through UNICEF. It follows Paul's earlier books: UNICEF Home Gardens Handbook, UNICEF, New York 1982; A Manual for Nutrition Oriented Mixed Gardening, Peace Corps., Washington, D.C. 1984; Low-cost Farming in the Humid Tropics, Island Publishing, Manila, 1983.

"God Almighty first planted a garden"
- new gardening handbook for the semi-arid tropics

P.S.: Paul Sommers did it again. He just has published a handbook for programme planners: "Gardening for food in the semi-arid tropics". A WHO/UNICEF Joint Nutrition Support

Programme Publication, 1986. The reference to the Almighty prefaces the book and is by Francis Bacon in his "Of Gardens" from 1625. As usual, this Paul Sommers production is brief, understandable, practical and tells you everything about your baobab, your sweetsops and your soursops. Read it. Dig.

PROGRAMMES -

WHERE THE ACTION IS

Rural domestic water supply and sanitation in Bangladesh - how it really works

There is a DANIDA-UNICEF evaluation of rural water supply in Bangladesh going on since several years back. This is supervised by Danish sociologist Kristian Laubjerg in Dhaka. Now one major study, entitled Rural Domestic Water Supply and Sanitation Study in Bangladesh, has emerged from Dhaka University. There are two solid volumes from April 1985. The author is Dr. M. Alimullah Miyan.

In a surrounding of a high rate of acute diarrhoeal disease as a constant feature of life, Bangladesh shows an annual prevalence rate of 15 percent (55 days per year) for children of less than 3 years of age. In Bangladesh, about 80 percent of all serious illnesses are said to be linked with the lack of adequate drinking water and sanitation facilities. Diarrhoeal diseases are considered as the major cause of death of all the acute infections.

The Bangla Government action for water and sanitation in rural areas is one of the most intense in the world. The Government programme, assisted by UNICEF with great contributions by other donors, notably the Danish Government (DANIDA), has brought the total number of tubewells for domestic

water supply installed with simple handpumps to over 600,000, excluding the private tubewells.

The present study which is one of the largest ever undertaken anywhere in a UNICEF context, if not the largest one, includes 3,200 households in 16 different districts all over Bangladesh. The mean size of families in rural Bangladesh is 6.4 persons. Many data presented in this study go beyond the mere use and effects of water and sanitation. It gives a fascinating view of the conditions and problems of Bangladesh villages and households.

There are many implications of the study: total water requirements for all domestic purposes was estimated to 323 litres per household with a per capita requirement of 51 litres. The per capita requirement for human consumption only is 47 litres, the rest goes to domestic animals and miscellaneous uses. The most used water source is the pond in both rainy and dry seasons. The next used source is the tubewell, which is primarily used for drinking and cooking. There is increasing awareness of the health aspects of tubewell water use.

Water quality: people generally regard tubewell water as reasonably good. But also other waters, however contaminated, can be regarded as good. People do react on high iron and chlorine content in the water. The quantity of water storage is a little over 4 litres overnight. Contrary to the DANIDA evaluation in 1978, it was found that the availability of containers is now not a problem. There is no need to provide containers as a possible health measure or to encourage storage which may lead to contamination.

Eight-two percent of the rural households may use of tubewell water. The average quantity of tubewell water requirements per household was estimated 57 litres, with 9 litres

per capita. Tubewell water constitutes about 18 percent of the per capita domestic water requirement of tubewell water used in households. Privately owned tubewells were found to be more intensively used than community wells. This is also partly related to the location closer to the households.

Health considerations seem to have penetrated quite a deal in the last few years. They are the primary reasons for using tubewell water. Tubewell water is primarily used for drinking followed by cooking. Women are the primary collectors of tubewell water. Thus they are the prime candidates for being associated with the decisions about tubewell water provision.

Operation and maintenance is not a major problem. People are conscious of tubewell breakdowns and take initiatives to fix them. One-third of the households make financial contributions to the maintenance of community owned tubewells. Health awareness of males and females increased the level of initiative for repairing non-working tubewells.

Privately owned tubewells are more in use in the richer sections of the society. The community-owned tubewells are the mainstay of landless and marginal landholding families. Even with private tubewells, most people cannot afford them at individual level. Most households feel dissatisfied with the existing tubewells on account of distance and insufficient quantity of water. They did not see the ability to contribute financially towards solution of the water supply problems. This inability was found to be independent of health awareness or family income level. There is thus a need for more motivational efforts for increased contributions.

Defecation: Adult males mostly go for defecation in the bush, less by

latrines or in open fields. More adult females go to the latrines for defecation. Girls and boys go for defecation primarily in the bush and children indiscriminately defecate anywhere. Most males and females perceive the place of defecation as a problem of high concern. The males feel that this can be solved by them. Most females feel that this cannot be solved. Construction of latrines is seen as the means of solving the defecation place problem.

People do not see the contaminating effect of excreta. Cleansing is primarily done with water. Thus the habit of cleansing with water depends on the distance to the water source. Most people indicate separate washing of hands after cleansing. Women in particular were found to take care to clean hands at least with water before handling food. But use of effective cleaning agents, such as soap, is extremely limited. This is highly associated with the level of family income. Health awareness and female education have a great effect on these attitudes.

Nearly forty-three percent of rural households have latrines of some sort. Most latrines are of a non-sanitary type. Only about 3 percent of the latrines are of a sanitary type. Little over 1 percent are of those of the water-seal variety. The common variety is kutcha (means bad) and this is not hygienic at all.

The estimated costs of different types of latrines are quite high and hardly affordable with the low income levels. The heaviest cost is for the enclosure. Less costly superstructures would have to be promoted. The knowledge base for different types of latrines seems to be fairly extensive except for the water seal variety. Preferred latrine types are the non-water seal variety sanitary pucca (proper) latrine. Most disliked aspects of latrines are bugs, smell and inadequate privacy.

Latrine maintenance is paid least attention. Pucca or non-kutcha variety latrines are mostly clean. Most ladies of the households face several serious problems in latrine maintenance. Most latrines are used by adult males and females of the households. Average number of users per latrine is estimated to be seven per day. Privacy as a factor has considerable influence on the use of latrines. The problem of accessibility is the one singular constraint to uses of latrine by the people. The lack of privacy would be the second-most deterrent.

The perception about health care and hygiene issues are important factors but seem to be somewhat varied. Emphasis is more on taking nutritious food to remain in good health, followed by taking a bath by the females and taking a regular rest by the males. Only a small proportion of people recognize drinking tubewell water as a health care activity. Sanitation awareness is at a minimum. Ladies and heads of rural households are better at ascertaining the symptoms of diarrhoea. The cause of cholera is mostly identified with rotten food, followed by impure water.

Women and community leaders seem to be the most important target groups to be reached with health education. Villagers generally need much more motivation to incite their participation in water and sanitation activities.

Landless and marginal landholding households constitute about 51 percent of the rural households. They are the most disadvantaged ones. A particular target for any participation promotion would be the women. The need to involve NGOs in the whole community motivational process is very strongly emphasised at the end of the well documented study. Hundreds of detailed tables backstop the general findings.

Bhutan - Water and sanitation in the Himalayas

Bhutan, a small country with exceeding beauty, is wedged into a corner of the Himalayas between India and China. UNICEF since many years back is assisting water and sanitation programmes there. Water supply is largely through spring protection and piped gravity schemes to standposts in the villages.

A review of the programme was carried out in 1984 by Dr. Joseph Christmas of the WET Section, UNICEF Headquarters, and Ragnar Schönborg, who presently heads UNICEF's water and sanitation inputs in Bhutan. Management and training are high on the list of activities, so is health education and community motivation, especially for the operation and maintenance of the facilities.

Nepal: Alternative sanitation in Bhaktapur

The age-old, beautiful but cramped cities of Nepal have one big problem. Sanitation. The narrow streets and the big old houses, palaces and temples do not allow for much manoeuvring and digging in order to get sewage pipes into the ground. Also the resources, costs and operational concerns would not make it easy to keep up a conventional sanitation system.

Thus His Majesty's Government of Nepal and the Federal Republic of Germany through the German Corporation for Technical Cooperation (GTZ), for more than 10 years have worked on a specific project in beautiful old Bhaktapur, the old capital of Nepal, just half an hour by road out of Kathmandu.

The result of this work is now described in a most beautiful volume of 195 pages, published by the Community

Development Unit in Bhaktapur through authors Kumar Lohani and Ingo Guhr. The most interesting part of this profusely illustrated volume is the involvement of people, training of community workers and campaigns for cleaning, latrines, safer composting. The experiences seem encouraging. Wisely, this project was allowed a period of over 10 years to come into fruition. That tallies with our own experiences that you do not just snap your fingers and believe that in two or three years time of a project you would have everything perfect and in order. Forget about the technical aspects. We know them. What counts, are the changes of attitudes and beliefs. To get everybody into the act and to understand it, in our experience takes at least between ten and fifteen years, half a generation. After all we have to depart from habits that are thousands of years old.

For the report, write to GTZ in Eschborn, Federal Republic of Germany, attention Dr. Hinrich Eylers or Mr. Klaus Kresse.

Nigeria: Wasade News are good news

Wasade News is the newspaper-sized newsletter of the UNICEF-assisted rural drinking water supply and sanitation pilot project in Imo State, Nigeria. An excellent publication, printed for everybody interested in the health and future of their children. It goes way beyond the Water and Sanitation Decade news it set out to be. There are articles on immunization, community management and on UNICEF's workshop manager, Bengt Andersson. He is called "no junk man" by his mechanics and welders. Bengt has demonstrated how one can build water distillation plants from motor parts salvaged from junk around his workshop. The cooling system from an abandoned bus similarly became an electric water pump fitted to a mobile water tank.

Pakistan: Azad Jammu and Kashmir -
water and sanitation: an evaluation

We still feel the aftertaste of mangoes chilled in the icy waters of river Neelum at Muzaffarabad on the hottest day of the year. These beautiful valleys in the Karakorum Range of mountain giants also are the scene of one of the first really successful applications of village promoters, men and women, to teach sanitation, health education and hygiene and how to build water and sanitation installations. This is one of the first efforts to really advance women in villages in Pakistan.

A series of training courses have been held during the last five years in Northern Pakistan for men and women from villages both from Azad Jammu and Kashmir and from other provinces as well. A recent evaluation shows that among the outcomes of this programme were that two new items were introduced after community requests: bio-gas plants and the extension of piped water to village households. Nearly all (91%) of the latrines constructed under the programme were being used by all population groups - men, women and children. Of the bio-gas plants, about 70% were properly in use. In some villages, however, the local masons cut off the water seal caps of the latrine bowls. "Evidently they did not understand the principle of water seals".

Latrines, though, are only being constructed in better-off homes. Poorer people suffer financial constraints in building them. The female promoters are seen as effective in organizing both women and men. But often they are more concerned with meeting physical construction targets, than with educational and organizational activities which lag behind. A particular phenomenon in some villages is the annual migration, sometimes of entire villages, to valleys in search of better grazing pastures for their animals.

The introduction of piped water supply schemes reduces the time spent by village women fetching water. This has a negative impact on social encounters, such as the gathering and gossiping, an important element in village women's lives. In one village an older woman requested that promoters organize other activities, such as sewing or nutritional and immunizational activities, to make good use of the time saved and to make up for lost socializing. We wonder, was this evaluation made by a man or a woman?

Tanzania: Development of shallow
wells in rural water supply

This is the theme of an Engineering Master's thesis of 167 pages, by Mr. Marcus Mtunzi, Dar-es-Salaam, Tanzania, March 1984. Very interesting overview of shallow well development all over Tanzania, against the background of the local hydrogeology and the different types of technologies used. Full of information and very clearly written.

Rotary International, Australia: Save
water, save lives in Thailand and
elsewhere

John Van Der Haar from Australia has a life long experience in building simple water reservoir systems. For the last several years, he has been active to help introduce community-built water tanks for rain water catchment in developing countries. John is a Rotarian at that. He has brought his know-how and the world community service spirit of the Rotarians together into a project called Save Water - Save Lives. His main efforts with support from Rotary International, are so far in Indonesia and Thailand. Mr. Mechai, the President of the Thai voluntary organization PDA, famous for its family planning cum community development programmes, and also now

the Water Supply Chief of Thailand, is enthusiastic. The first tank of John van der Haar's design was built near Khon Kaen in the northwest of Thailand. It was put up in a matter of two and a half days, and was followed by a host of others. This was achieved through a perfect coordination cooperation between PDA and John Van Der Haar together with working parties of 20 to 25 villagers.

John says "where Rotarians in Australia donated the hardware and technical 'know-how' and in the receiving country there is an organisation which can supply software (sand, stones, cement and reinforcing), we seek to establish an ideal relationship and understanding between both parties." The Thais seem to like the tank both for its function, its shape and good looks. They say: "it will be visited so often and it contains the most precious commodity". Here we have a perfect example of how voluntary organizations can contribute not only materially but with direct promotion, helping both to better understanding of the issues and needs and between different nationalities. Write to John Van Der Haar. Maybe he and his fellow Rotarians can help you with your tank problems: 144 Wantirna Road, Ringwood, Victoria, Australia 3134. Tank you!

UNDP/World Bank Project pushes preparation of Peppy Projects

As part of their strong support for the International Drinking Water Supply and Sanitation Decade, the UNDP/World Bank Project RAS 81/001, for the preparation of water supply and sanitation projects, has now established offices in Dhaka and Bangkok, to serve the South and East Asia regions respectively. The project is staffed by former World Bank project officers with extensive experience in tailoring projects to match the needs of recipient countries with the constraints of donor agencies.

Particularly emphasis is given to facilitating bilateral assistance for rural water supply. For further information please contact,

South Asia: Chandra Godavitarne
Project Manager
World Bank
222 New Eskaton Road
G.P.O. Box 97
Dhaka, Bangladesh

East Asia: Arthur Bruestle
Project Manager
World Bank Regional
Mission in Bangkok
Udom Vidhya Building
5th Floor
956 Rama IV Road
Bangkok, Thailand

WATERFRONT's warmest wishes for all success. May the Force be with you.

Yemen: Ethel and Jim Grant washing their hands at water inauguration

This photo comes from the inauguration on 9 July 1985 of the Dobra-Khira rural water supply project in the Yemen Arab Republic. The UNICEF Executive Director, James P. Grant with his wife Ethel just show an example of good personal hygiene by washing their hands at a public standpost in the Yemeni village, together with UNICEF Regional Director for the Middle East and North Africa, Victor Soler-Sala and H.E. Engineer Abdulla Hussein Al-Kurshum, Minister of Public Works. Saha Wa Afia!

(See last page for photo)

BOURNE, Peter G.: Water and Sanitation - Economic and Sociological Perspectives

Published by Academic Press, Inc.
(Harcourt Brace Jovanovich) Orlando,
San Diego, New York, London, Toronto,
Montreal, Sydney, Tokyo, 1984, 300p.

Water and Sanitation for All under the Decade. The list of authors reads like a Who's Who in Water, including specialists on health such as Richard Feachem, Paula Donnelly Roark for women and water and B.B. Sundaresan of NEERI in Nagpur, India, on water resources.

ESCAP Water Resources Journal

Since a few years back, one of the most practical publications we have encountered on a regular basis, is the Water Resources Journal from ESCAP, the Economic and Social Commission for Asia and the Pacific. It contains a number of articles on subjects close to our hearts, concentrating on Water Decade-related issues, development and management, research, technical applications and the special Asian-Pacific experiences. This journal is distributed free of charge in Asian and Pacific countries to organizations and projects in the public sector concerned with water resources development, and to institutions elsewhere on a selected basis. Write to: The Chief, ESCAP Natural Resources Division, United Nations Building, Rajadamnern Avenue, Bangkok 10200, Thailand.

EVALUATIONS

A monitoring and evaluation manual for low-cost sanitation programmes in India

The art of evaluation takes great strides these days. A beginning was made by the group around the London School of Hygiene and Tropical Medicine through Richard Feachem, Sandy Cairncross and other researchers with their pioneering work in Lesotho for the 1977-78 ODA evaluation of a national water and sanitation programme there. A further refinement

and step towards a necessary simplification of the process was taken more recently by WHO through the work by Gunnar Schultzberg, resulting in the MEP (Minimum Evaluation Procedure). The latest addition to the literature is A Monitoring and Evaluation Manual for Low-cost Sanitation Programmes in India by Ronald Parlato, TAG Technical Note Number 12, UNDP Interregional Project INT/81/047 and published 1984 by the World Bank, 1818 H Street, N.W., Washington, D.C. 20433, U.S.A., 80p. It provides you with a series of practical questionnaires and the how-to of evaluations. It also may help you with your social marketing of latrines. Did you hear of them from the radio? Did you read about them in the newspaper? Did you read about them from handbills? Did you hear about them from family or friends?

TECHNOLOGY -

ANCIENT ACTUALITY

Sicily: Water and personal hygiene 2000 years ago

Dora P. Crouch is an architect cum sanitary engineer, teaching town planning and sanitary engineering at Renselaar Technical College in Troy, some 200 kms. north of New York City, U.S.A. She specialises in a branch of archeology, which is utterly interesting, because as usual, the past is the key to the present. How did the ancient Greeks do it in Morgantina in Sicily, a part of the world with low rainfall and high evaporation? That city, over 2,000 years ago had an excellent piped water supply system, fed from springs.

The Morgantinians had cisterns under their courtyards, beautiful bathrooms with terracotta bathtubs, even baby bathtubs, and latrines, although with drains only onto the alleys or streets. Their pipes were made of terracotta and

lead. The problems with water supply were the same then as now. Leakage at the pipe joints was also then a common problem. At regular intervals there were hand-holes for cleaning the water pipes. There were also drain pipes and channels.

This kind of archeology can lead to valuable ideas for present-day constructions when there are few means and materials available other than locally. There are so many other examples. Moendjodaro in Pakistan was one of the first large cities in the world, four or five thousand years ago. There are remnants of similar water and sanitation systems. For the curious, talk to: Prof. Dora P. Crouch, The School of Architecture, Renselaar Polytechnic Institute, Troy, New York 12181, U.S.A.

TECHNOLOGY - WATER

Practical Water Well Manual

This is a reprint from an original from 1969. In fact, this one is from 1979, so it is already six years old but it came into our hands only now: A manual for the Construction and maintenance of water wells for Peace Corps volunteers, prepared by VITA (Volunteers in Technical Assistance, Inc.), 3706 Rhode Island Avenue, Mount Rainier, Maryland 20822, U.S.A. It looks very practical, although in terms of water well drilling and handpumps, recent developments might motivate a complete reworking. 169p.

Handpump highlights in new newsletter

Editors G.J. Bom and E.P.C.M. Rock are now publishing and distributing a newsletter, called "Handpump Development News". They want to create a worldwide forum for engineers,

sociologists, economists and whatever other disciplinists who want to disseminate knowledge related to the design, utilization and management of hand- and foot-pumps.

For copies, write to:

B&R Consultants
C. Huygenslaan 43
3351 XA Papendrecht
The Netherlands

Humming handpump with ultraviolet water purification

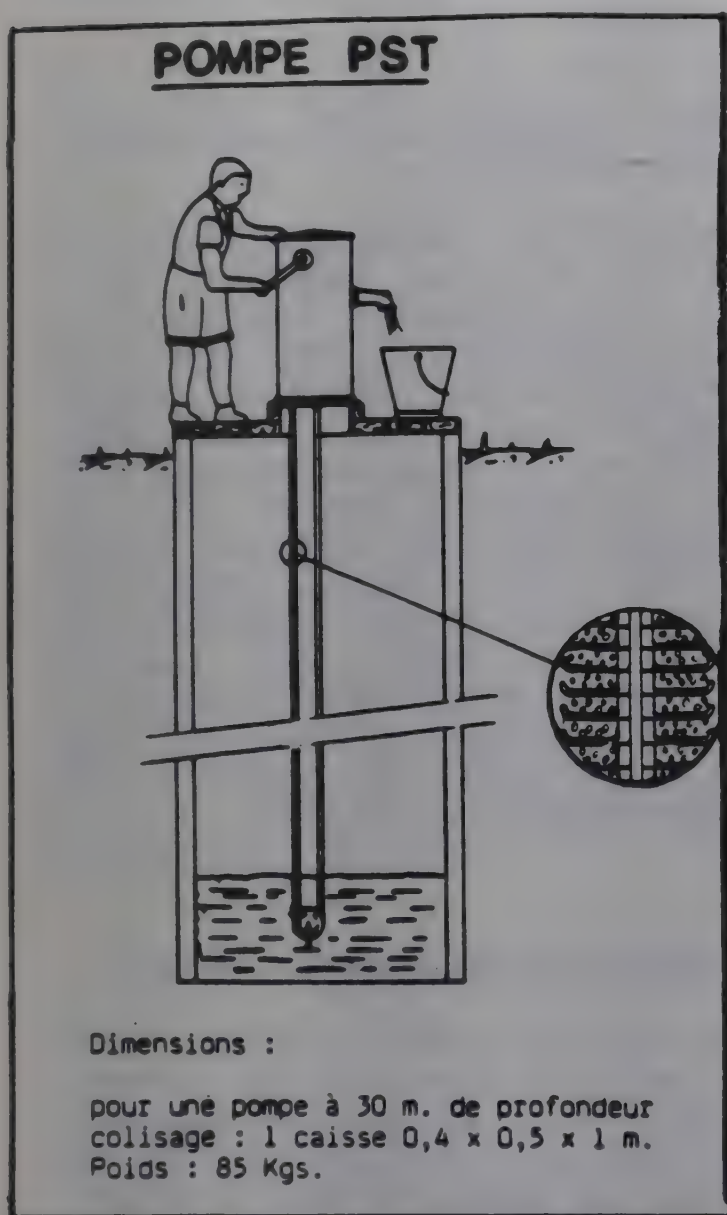
A group of Belgian manufacturers have come out with an adaptation of a nationally produced handpump for instant disinfection. They have added a small electrical generator, coupled to an ultraviolet disinfection unit. Pumping away by hand in the same time keeps the generator humming. Quite an innovative approach. The one problem remaining: the risk for reinfection of the water during transport and storage in the homes. This, however, is a problem we all have to cope with whatever the source of water is. Wish we had a built-in generator for sanitation education as well.

New chain pump from France: Masure

A new type of chain or, rather, cable pump has been developed by a French company. It is designed for dug wells or drilled wells down to 8 in. (20 cm) diameter for depths of over 30 metres. The installation is said to be extremely simple without need for any trained mechanical person. At a depth of 30 metres with 40 r.p.m. of the handle, the pump yield is said to be 1.8 cubic metres per hour.

This pump can also be driven by an engine. The water is raised from the well by small cups of polyacetate, (a

plastic that is pretty tough) attached to a stainless steel cable. It is also claimed that algae are hesitant to attach themselves to the pump elements. The pump can function also when the water rises to only 60 cm above the bottom of the well. The ease of manual operation is claimed to correspond to a pressure on the handle of 15 kg at 30 metres.

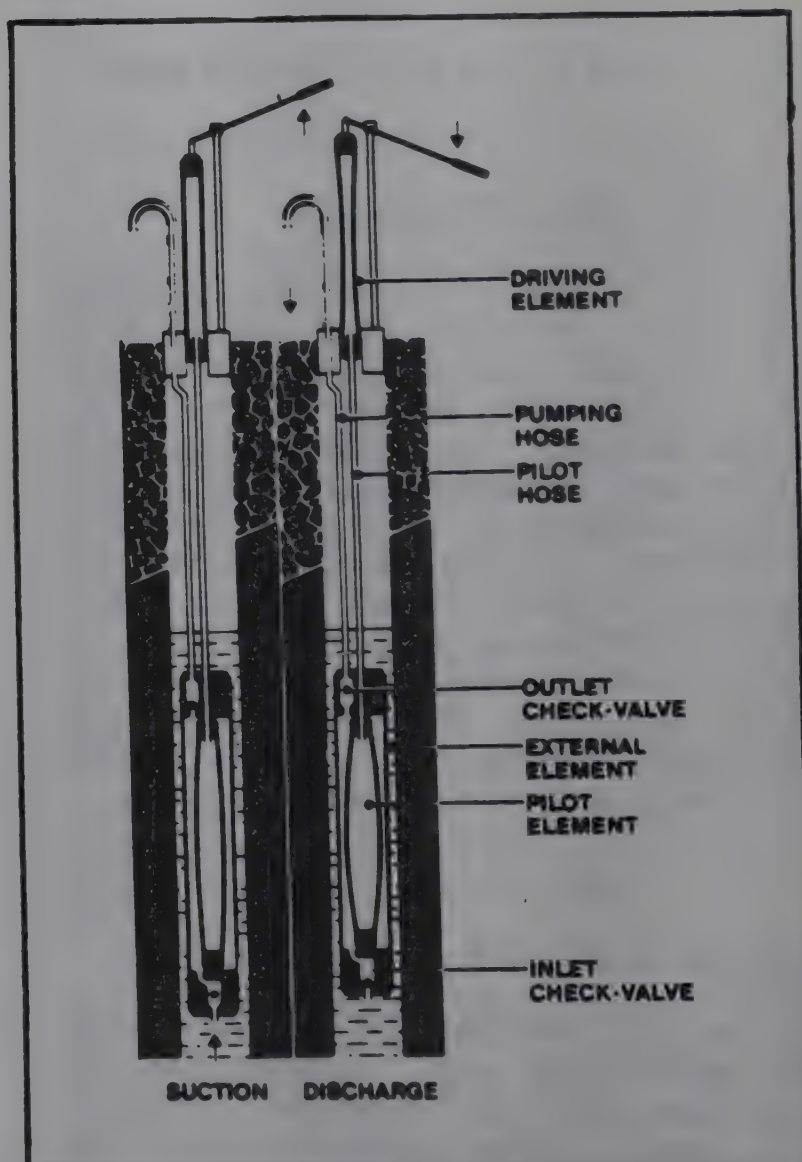


The cost of the hand driven pump for this system is in the order of 7,500 French francs ex-factory. They are delivered for shipping in packages of four pumps each. The first such pumps were dispatched beginning of 1985 to Burkina Faso (Garango) and to Chad.

New handpump without mechanical friction - radically new look of the Petro Pump

The Petro Pump, reported on quite a few years ago by WATERFRONT, has now been considerably revised and refined. This is partly a result of the tests it underwent at the Consumers Association Laboratory in the U.K. under the UNDP/World Bank Handpump Testing and Development Programme.

A major manufacturer has now come up with virtually a new design. (See illustration below.) It incorporates double elastic membranes at the bottom and another one at the top of the well. They have done away completely with the anchors down-hole that were ingeniously designed, but which constituted quite a problem in actual use.



The India Mark-II handpump - development, marketing and spread of a handpump

We have variously been asked for descriptions of how handpumps are being developed and promoted in different countries. There is a great concern to find a handpump that really would work with a minimum of maintenance, in spite of rough handling by hundreds of villagers daily. It must be possible for the villagers to operate and maintain the handpump themselves.

Some years ago, Shaul Arlosoroff of the World Bank coined the expression "VLOM" handpumps. VLOM stands for Village Level Operated and Maintained pump. An interesting overview of a major case of handpump development, that of the India Mark-II, was recently produced by TATA Economic Consultancy Services in India for UNICEF. They did it as one part of an assessment of semi-industrial projects assisted by UNICEF in India.

The tale of the India Mark II handpump is a very interesting one. Presently 140,000 such pumps are yearly produced in some 40 different factories in India, recognized by UNICEF for submitting to established standards and quality control before delivery. An estimated 20 to 30 million people each year get access to water closer to their homes through such handpumps being installed in drilled and dug wells. They no longer need to walk miles to distant and contaminated water sources.

The TATA study also covers other developments, such as the milk-drying and weaning food plants in Anand, the birthplace of the famous farmers co-operative. Way back in time UNICEF contributed to a small dairy and milk drying plant for some US\$ 250,000. This helped give rise to a co-operative empire of more than 2 million members in various states of India.

Handpump platforms: How to combat organic contamination of concrete

From Haavald Schjerven, of the UNICEF Supply Division Engineering Team in Copenhagen, we have the following most interesting contribution:

After a long search in the U.S. and Europe, I have finally found an additive which neutralizes the destructive effect of organic particles in the concrete.

As discussed during several field trips, this problem occurs especially when soil or sand dug directly from the ground is being used when mixing the concrete, particularly for hand pump platforms.

By using the attached specified additive, the life-length of the concrete will increase when there are problems with organic contamination. The additional cost by using the additive can also be partly reduced by reducing the quantity of cement.

Application and composition:

The deleterious effect of aggregates which are heavily contaminated with organic material, can be alleviated by additions of active materials to concrete mixes.

Most of the harm caused by organic material in aggregates is due to that part of the material which has been transformed to alkaline soluble humines, humic acid and similar materials formed by decay. A substantial part of soluble material can react with calcium ions, producing insoluble calcium salts, which are removed from the solution by precipitation and thus rendered harmless.

It is therefore possible to reduce the effect of organic contamination of aggregates by treating them with an alkaline solution containing calcium

COMMUNITY HEALTH CELL

47/1, (First Floor) St. Andrews

ions. Such a solution is afforded by the addition of a substance called PETRON - together with the mixing water, prior to the addition of cement.

PETRON is an additive produced from a mix of active components giving optimal treatment in order to neutralize the negative effects of humus. PETRON will also add compressive strength to the concrete. PETRON will also provide an accelerated hardening of the concrete, and this will also partly offset the retardation caused by organic material.

PETRON does also contain a special quality of silica fume, a derivate from the ferro silicon industry. This component does not compensate for humus, but will add plasticity to the mix, increase workability and strengthen the concrete. Other dispersing agents are also added to the mix.

Dosage:

An estimate of the amount needed can be made, assuming a maximum content of alkaline soluble humus material of 5% of the aggregates - which is a high figure. (With a humus content of 10% the aggregates must be classified as humus or topsoil). The following recommendation has therefore been made under the assumption of 5% humus content in the aggregates.

For a concrete handpump platform of 4.5 cubic metres (10 - 11 tons), and with a mix ratio for the cement: aggregate of 1:4, the suggested addition would be $11 \times 25 \text{ kg} = 275 \text{ kg}$ PETRON.

When using the additive, it is extremely important to mix it with all of the aggregate, and the mixing water, for 10 minutes before the cement is added. On no condition should PETRON be added directly to the cement. Apart from this, the concrete may be mixed as usual.

However, by adding 275 kg PETRON, the cement amount can be reduced by 8% or 175 kg. In general, by adding PETRON to the concrete mix, the cement requirement can be reduced by 60% by weight of the PETRON added. Example: if adding 100 kg PETRON to the mix, the cement amount can be reduced by 60 kg.

New complete wind pumping system from Australia

We haven't seen it in the field yet, but an Australian manufacturer offers a wind turbine, self-governing, with a self-priming rotary pump. This system it claimed to be the first direct drive wind-powered pumping system in the world, eliminating gears, cranks, pulleys, clutches, water seals, levers and braking system. It eliminates MOST maintenance. It even can run dry, they say, without any damage. The wind turbine is based on the Savonius principle with high torque. The pump, the so-called "Draper" pump, builds on quite an ingenious mechanism, something in the style of the German Wankel engine. It says further that a typical wind powered pumping system would have three turbines and a 5 by 8 pump. This should pump 50 gallons per hour in 5 mile per hour winds at a 50 foot head.

The Worshipful Company of Turners gives Silver Medal of Excellence to ITDG windpump

The Intermediate Technology Development Techniques Ltd. in Rugby, home of rugby football, has developed a windpump which now is available under license by Intermediate Technology, the well known U.K. charity. There are two types with 9 or 12 metre towers, a six metre rotor which can provide up to 30 tonnes of water daily from a borehole 70 metres deep with 3.5m/sec average wind speed, and a 7.5 metre rotor which

can provide 50 percent more water under the same conditions. The windpump is now manufactured in Kenya and Pakistan.

More information from:

Peter Reid/John Frost
Intermediate Technology Development
Techniques Ltd., 3rd Floor
Myson House, Railway Terrace
Rugby, CV21 3HT
United Kingdom

or

Steve Bonnist
Intermediate Technology
9 King Street
London WC2E 8HW
United Kingdom

Hydraulic Rams - state of the art: Tanzania

IDRC of Canada held a workshop on hydraulic ram pumps (hydrams) at Arusha, Tanzania, 29 May to 1 June 1984. In February 1985 they published the proceedings, IDRC - No. 102 E, edited by Prof. Eric J. Schiller. 121 pages of hydram experiences. One of the first modern follow-ups we have seen in literature.

WASH rainwater information center

The Water and Sanitation for Health (WASH) Project is funded by the U.S. Agency for International Development. The purpose of the WASH Project is to provide short term technical assistance to rural and urban fringe water supply and sanitation projects.

A five year WASH II project began on October 22, 1984. One of the objectives of the WASH Information Center during this period is to establish an information center dedicated to rainwater roof catchment systems.

Rainwater roof catchment systems involve the construction and maintenance of cisterns, tanks and jars to collect rainwater from roofs. In many countries of the world, this is an important source of domestic potable water supply. Major advantages of this type of water supply system are:

1. The quality of rainwater is usually excellent.
2. The simplicity of roof catchment systems makes them easy to construct and maintain.
3. Roof catchment systems are not dependent on outside systems and therefore are especially useful in remote areas with difficult terrain.

The WASH Information Center has taken initial steps in facilitating the exchange of information between individuals and organizations interested in this topic and initiated steps for the bibliographic control of related literature. Steps which have been taken include:

1. Development of a specialized thesaurus to index and classify documents pertaining to rainwater harvesting.
2. Distribution of a questionnaire through a newsletter which reaches 50,000 readers in 120 countries to identify organizations active in rainwater roof catchment projects.
3. Development of RAINCOLL, a computerized bibliographic database created to index and retrieve citations pertaining to rainwater roof catchment.
4. Publication of a directory of organizations and individuals involved in rainwater roof catchment projects.

During the Water Decade, WASH hopes to become a key source of information for this important technology to developing countries.

Rainwater cistern systems - the Third International Conference, Thailand 1987

To be held 14-16 January 1987 in Khon Kaen, northeastern Thailand. Organized by the Faculty of Engineering, Khon Kaen University, and the Population and Community Development Association, headed by the famous Mr. Mechai. Objective: Complete review, update and exchange of information on the latest developments in rain water cistern systems. Rain water catchment is a very popular means of obtaining household water in Thailand and many other dry parts of the world.

Contact:

Secretary
Technical Committee
Third International Conference
on Rain Water Cistern Systems
Faculty of Engineering
Khon Kaen University
Khon Kaen
Thailand 40002

Compound catchment ferrocement water tanks in East Africa

Following an original design developed in Botswana, a group in Kitui district in Kenya some year ago picked up this idea with support from UNICEF in the person of Phillip Hassrick, our then Regional Technology Support Officer in Nairobi. This compound catchment water tank collects rainwater run-off from the ground. It is especially good for semi-arid areas with infrequent rains. The water is suitable for livestock and irrigation. If filtered, it can be used for human consumption.

The tank is made by digging a bowl-shaped hole in the ground, about 6 metres across and 3 metres deep. Layers of cement plaster covering the floor and walls of the hole are reinforced with barbed wire and chicken wire. The tank is then roofed and

shaded. Water is directed into the tank by a system of ditches and soil walls.

Materials required are 30 bags of cement, 2 rolls of barbed wire, 3x100 foot rolls of 1 inch mesh chicken wire, 15 drums of water, plastic sheeting: 35 sq. metres by 5, 5 tonnes of coarse sand, 100 sisal poles, 2 kg of 2-1/2 inch nails, 4 kg of 2 inch U-nails, 100 large bricks, 1 cubic metre of rocks, scrap lumber, rope and gravel. Labour required: 3 skilled artisans and 4 casual labourers. 9 days work after excavation. Tools required: shovels, buckets, karais (whatever that is?), cement floats, steel trowels, wire cutters, hammers.

(For copies of the instruction manual, WET file 5.1.4.3.2. Storage.)

COMPOUND CATCHMENT FERROCEMENT
WATER TANK
CONSTRUCTION MANUAL

MATERIALS REQUIRED:

30 bags of cement	5 tonnes coarse sand
2 rolls of barbed wire, 12 1/2 gauge	100 sisal poles
3 rolls, 3x100ft, 1 inch mesh chicken wire	2 kg of 2 1/2 inch nails, 4 kg of 2 inch U-nails
15 drums of water	100 large bricks
plastic sheeting: 35 m ² x 5	1 m ³ rocks
	scrap lumber, rope, gravel

LABOUR REQUIRED:

3 skilled artisans and 4 casual labourers, 9 days work after excavation

TOOLS REQUIRED:

shovels buckets karais cement floats steel trowels
wire cutters hammers

SITING:

The tank should be situated in the lowest part of the catchment area. It should not be in a basin or a river bed. No trees should be growing nearby, to avoid damage by the roots. If the water is for irrigation, it is convenient for the tank to be situated above the garden to gravity-feed the water to crops without a pump.

Soil with a fair amount of clay in it is best. Rock is hard to dig out but provides a stronger foundation. Soft sandy soil will need extra reinforcement; either by lining the tank first with mortared bricks or by adding gravel to the plaster, making it concrete, and by using extra wire. A concrete-filled trench around the perimeter will also provide extra protection from moving soil.

1

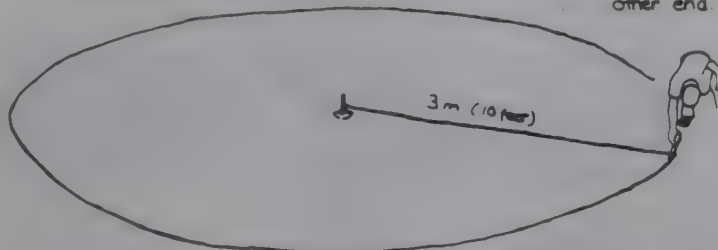
EXCAVATION

In the center of the chosen site, dig a hole 40cm deep.

Put a strong pole, 80cm high, in the hole. Mix some concrete to put in the base to hold the pole in place.



Tie a string 3 meters (10 feet) long onto the pole and tie another stick to the other end.



Then, pulling the string taut, mark the circle in the soil.

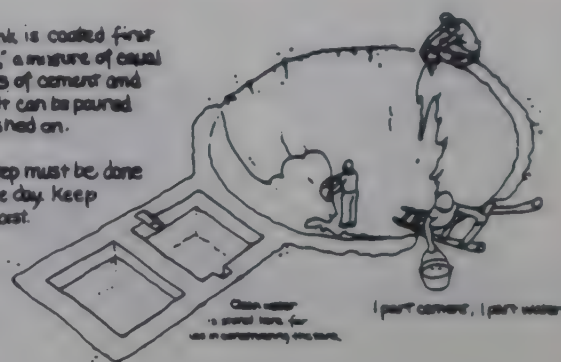
Next, dig within the circle, removing a 2-foot layer of soil at a time. Leave the soil under the center post and use the string to measure the radius. A layer of rock is usually easier to remove if firewood is burned on them, and then splashed with water.



3

The tank is coated first with 'nil' a mixture of equal amounts of cement and water. It can be poured or brushed on.

This step must be done all in one day. Keep the nil moist.

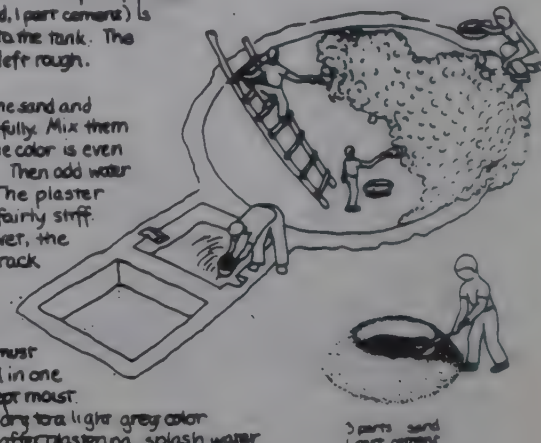


Next day, a 3-4cm layer of plaster (3 parts sand, 1 part cement) is thrown onto the tank. The surface is left rough.

Measure the sand and cement carefully. Mix them dry until the color is even throughout. Then add water carefully. The plaster should be fairly stiff. If it is too wet, the tank may crack later on.

This layer must be done all in one day, and kept moist. Do not let it dry to a light grey color. Four hours after plastering, splash water on it, or cover with wet bags or plastic.

Using more cement in the plaster will not make it stronger.



2

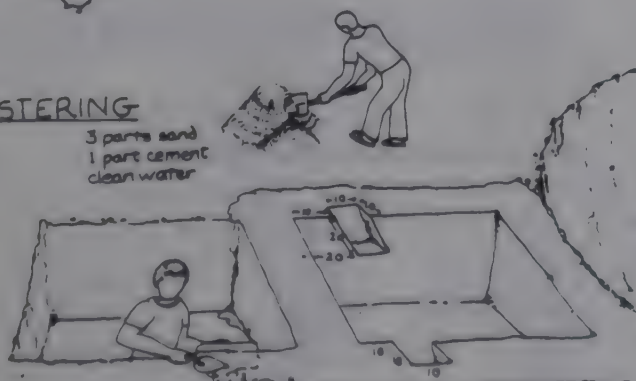
Excavate a hemisphere, or bowl shape, of a 3 meter radius. Use the string until the shape is attained. Then, remove the center pole and soil.



At the place where water will enter the tank, excavate 2 cubes, approximately 1m x 1m x 1m. Carve 2 notches as shown, 10 cm x 10 cm x 20 cm. These will be silt traps to partially filter the water.

PLASTERING

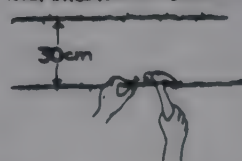
3 parts sand
1 part cement
clean water



Plaster the silt traps first. After 4 hours, they can be filled with water to be used in ferro-cementing the tank. Always keep the plaster damp. Never let it dry to a light color for the first 4 weeks.

4

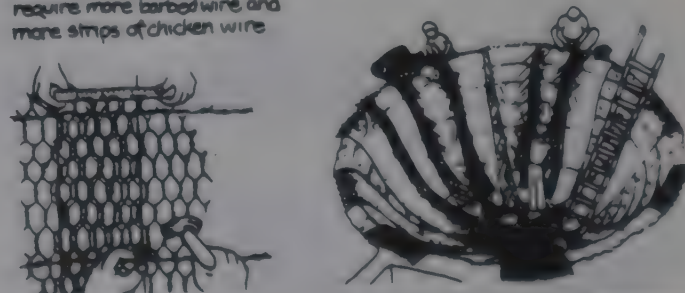
Next day, the plaster is strong enough to hold nails. Starting at the top, the barbed wire is rolled out and nailed onto the plaster. Nail 2 rounds at the top edge, then continue in a descending spiral with intervals at 30 cm.



Then chicken wire is nailed down with U-nails or straight 3 inch nails. Four whole strips of chicken wire cross in the center and two shorter strips overlap.



In between larger tanks will require more barbed wire and more strips of chicken wire.



5

The second coat of plaster (3 parts sand, 1 part cement) is thrown on and troweled smooth. This step must be done all in one day.

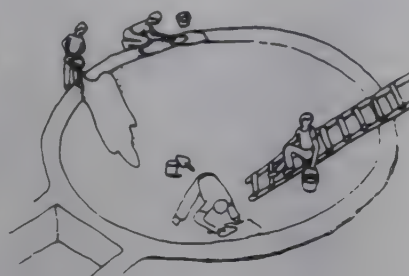


Keep the plaster damp!

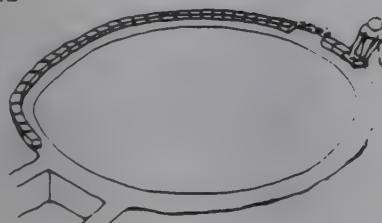


A final coat of nil (1 part cement, 1 part water) is poured on and pressed onto the surface with a steel trowel. The layer of nil should be 1 cm thick.

Keep the tank damp by covering with plastic or wet bags, or splashing with water.

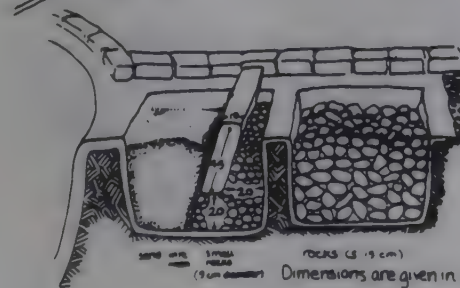
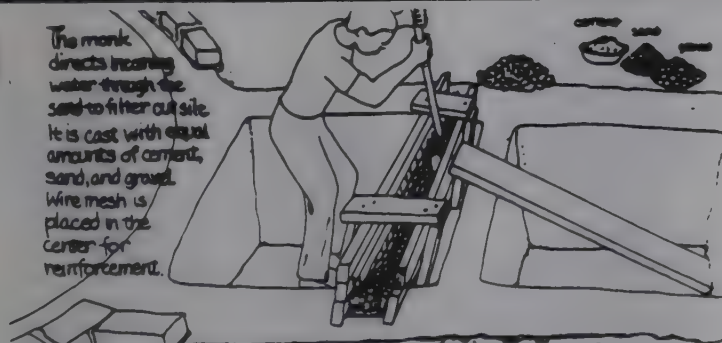


One or two courses of bricks are laid around the edge to prevent unfiltered water from entering and to support poles for the roof. The span between the silt trap and the tank is left open. Directly opposite, a gap is left in the bricks to direct overflow water out the back.



6

The monk directs beaming water through the sand to filter out silt. It is cast with equal amounts of cement, sand, and gravel. Wire mesh is placed in the center for reinforcement.



Rocks (8-15 cm length) are placed in the first silt trap. Small rocks (5 cm) are placed before the monk. On the other side of the monk, a piece of wire mesh is placed. The remaining area is filled with sand. A brick wall, slightly higher than the monk, is laid on both sides of the silt trap.

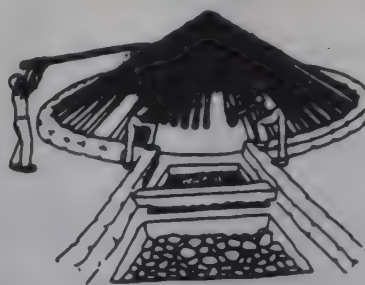
Dimensions are given in centimeters.

THE ROOF

The roof is begun by tying 4 sisal poles together at the small ends. Four men then lift them in place. They rest on the rim of the tank against the mortared bricks.



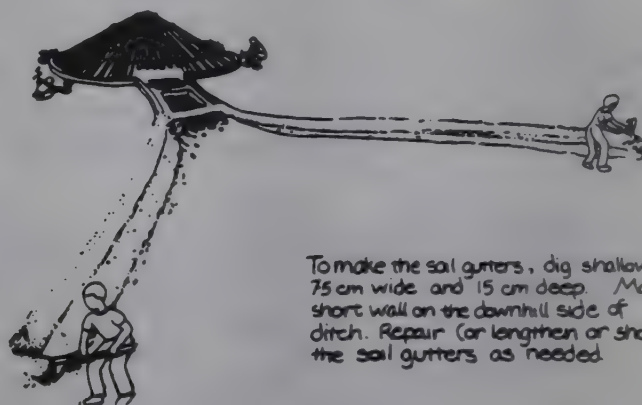
7



Additional poles are woven into the ropes and tied together to form the roof. This prevents animals and children from falling in. In addition, the tank may be fenced.

Green creeping plants, such as lalaka or passion fruit, can be planted and grow up the poles. This provides shade for the water to reduce loss by evaporation.

When the tank is finished, the "soil gutters" are dug to direct runoff into the tank through the silt trap. The angle of the ditches should be fairly wide to gather runoff from a large area. The slope for stone runoff should be a 1:5 cm rise per meter. The for soil runoff should be steeper, about 2:3 cm rise per meter. The two ditches should be about 100 meters in length.



To make the soil gutters, dig shallow ditches 75 cm wide and 15 cm deep. Make a short wall on the downhill side of the ditch. Repair (or lengthen or shorten) the soil gutters as needed.

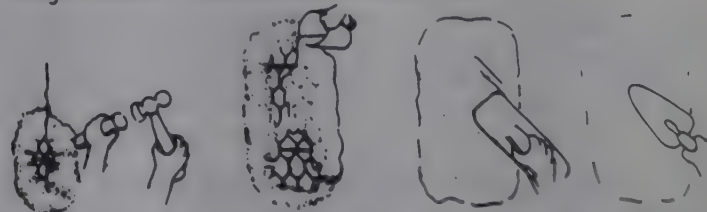
8

QUALITY CONTROL CHECKPOINTS

1. Was the cement and sand mixed thoroughly, until the mixture was all one color, before adding water?
2. Was the water used in the cement plaster clean?
3. Was the plaster fairly dry, with just enough water to make it stick together?
4. Did the chicken wire overlap 15 cm?
5. Were the intervals in the barbed wire spiral 30 cm?
6. Was the second plaster pressed on smooth?
7. Was the final coat of nil pressed on firmly with steel?
8. Are there no cracks in the nil larger than 5 cm after one week of curing?
9. Was the tank kept moist after every coat of plaster or nil, never allowing the cement to dry to a light grey color until after 4 weeks?

REPAIR

Larger cracks will need extra chicken wire as well.



1. Chisel away plaster within 15 cm of the crack.
2. Coat the area with nil.
3. Fill with plaster (3 sand 1 cement).
4. Coat with nil, smooth with steel.

If the crack reappears, or if water seeps out, a new ferroconcrete tank must be built inside the old one.

Clay pipes for water supply in Africa

Walter Rasmussen of Danish DANIDA has worked on and off in Africa for eight years. By lately he was planning for the water supply of some 300 villages in the Mbeya region of Tanzania. He informs us of a factory that was started in Tanzania some years back in Mbeya to produce baked clay pipes for water projects. Same way as they were used in the old Greek and Roman domains 2000 years ago. Pressure tests have shown that two socket pipes, 100mm, joined and clamped in a test rig could withstand a 37 metre water column before cracking. The main disadvantage is the need of firewood for the burning of the pipes. The procedure of making a socket pipe is roughly to fold a clay sheet, some 10mm thick, around a wooden form and shaped with the fingers. The mold is removed and the pipes cured by drying for some days. Pipes are then built up to form the kiln and baked at 800°C. The knowledge of selecting the suitable clays and prepare them, is normally available, where houses are made of burned bricks and pots are made by women. For more questions ask Walter Rasmussen, Kagerupvej 11, DK-3400, Hillerød, Denmark.

Villages can decontaminate water with potash alum

In the June 1984 issue of the Food and Nutrition Bulletin, Drs. K. Ahmad and K. Jahan of Dhaka University with Dr. I. Huq of the International Centre for Diarrhoeal Diseases Research, Bangladesh, in Dhaka, have come up with a way to purify drinking water by adding potash alum. They have found that a small amount of potash alum (500 micrograms) added to a litre of pond water, can kill the bacteria that cause cholera and diarrhoea in one to two hours. Potash alum has the advantage of being a substance that is already well known to villagers in many parts of Asia and Latin America. Drs. Ahmad, Jahan and Huq are now testing

the possible use of potash alum-enhanced water as a substitute for boiled water in oral rehydration therapy.

Disinfection of water in rural water supply

CEPIS, the Pan American Health Organization Centre for Sanitary Engineering in Lima, Peru, has published the results from a symposium in 1983 under the title "Investigación sobre disinfección de agua en abastecimientos rurales". Write to CEPIS, Casilla Postal 4337, Lima 100, Peru. The 194 pages contain quite an overview and practical experiences from use of different types of devices all over the Americas.

TECHNOLOGY - DOCUMENTATION

THE AT Reader

The sub-title says "Theory and practice in appropriate technology". Edited by Marilyn Carr, Intermediate Technology Publications, London, 1984, 468 pp. The source readings with both pros and cons of the appropriate technology, which E.F. Schumacher made famous through his "Small Is Beautiful". One of the many readings says "not revolution... but changing the rules". We say, "Anything that is appropriate, is appropriate".

WHO newsletter: Appropriate Technology for Health - the Water Issue

AT Newsletter, No. 14-15 of Spring-Summer 1984, on 44 pages gives a nice overview of water and sanitation ideas, methods and how to present the problems and solutions in an understandable way.

The Director of WHO's Division of Environmental Health, Dr. Bernd H. Dieterich, contributes with the Water Decade Boat Song in seven stanzas. And a series of frames on top of several pages says "we can no longer just let water go to waste/stop/nature is kicking back/stop/".

Netherlands Appropriate Technology Newsletter

The Tool Foundation in Amsterdam, the Netherlands, and the Atol Foundation in Leuven, Belgium, since 1972 jointly publish the magazine Vraagbak ("The Reference Book"). This quarterly carries articles on rural and peri-urban projects in terms of appropriate technology. English and French editions. The subscription costs 20 Netherlands florins (US\$ 7) per year. Write to: Vraagbak, P.O. Box 41, NL-6700 AA Wageningen, The Netherlands. Wageningen, incidentally, is the location for the old and famous Agricultural University of the Netherlands.

Book News from Intermediate Technology Publications, 9 King Street, London WC2 8HW

Thomas D. JORDAN Jr.'s new Handbook of Gravity Flow Water Systems in a properly printed edition, 250p. built out and revised from the first edition. ISBN 094668858. U.K. Pds. 4.95.

S.B. WATT: Septic Tanks and Aqua Privies from Ferrocement. 108p. U.K. Pds 4.95. ISBN 0903031957.

Forthcoming are Peter FRANKEL: Water Pumping Devices, a Handbook for Users and Choosers.

Bill KENNEDY and Claude ROGERS: Human and Animal Powered Water Lifting Devices, a State of the Art Survey.

Other earlier publications are:

S.B. WATT: Ferrocement Water Tanks and Their Construction. 1978.

S.B. WATT and W.B. WOOD: Hand Dug Wells and Their Construction. 1977.

A. PACEY: Handpump Maintenance in the Context of Community Well Projects. 1980.

S.B. WATT: A Manual on the Automatic Hydraulic Handpump. 1975.

A. PACEY: Rural Sanitation: Planning and Appraisal. 1980.

P. STERN: Small Scale Irrigation. 1979.

H.T. MANN and D. WILLIAMSON: Water Treatment and Sanitation. 1982.

ORGANIZATIONS

Water and sanitation addresses around the world

A most complete roster for information exchange on low-cost water supply and sanitation, recently was published by the WASH Project in publication of 179 pages, WASH Project Information Exchange Roster, by Dan B. Campbell, Office for Health, Bureau for Science and Technology, United States Agency for International Development, Washington, D.C. 20523, August 1985. Rush your order today. Almost everybody is in it.

Water in USAID

There are considerable changes in USAID's support mechanism at their Headquarters in Washington, D.C. The WASH (Water for Sanitation and Health Project) subcontract is continuing, headed by Leo St. Michel from the

Boston engineering firm Camp, Dresser & McKee. Dr. Dennis Warner (Research Triangle North Carolina) is its Research Director and other specialists involved are Philip Roark and Craig Hafner (formerly with Peace Corps).

John Austin continues with the USAID supervision of the WASH project, advised by Professor Eugene McJunkin. This whole group now belongs to the Division of Communicable Diseases Control and Water, headed by Mr. Jim Erickson. Together with a second Division for Health Services, it forms the Department of Health and Water in the Bureau of Science and Technology. New Director of the Department is Dr. Kenneth Bart, an epidemiologist from the famous Centre of Diseases Control in Atlanta, Georgia.

The past years's total USAID input in water supply and sanitation amounted to about US\$ 200 million, largest proportion of which in the Middle East. There are some apprehensions that the Agency would cut down its budget on water supply. We hope not. If they would have to, may they keep on support to the poorer areas. Among recent decisions in favour: Considerable funds through UNICEF in order to secure ongoing water well drilling with hand-pump installations in Benin. This will be co-ordinated with major USAID inputs there for health education.

In UK: change at ODA

Britain's Overseas Development Administration has a new head of engineering from 1 July 1985. He is Terry Pike, who currently advises on ODA projects in Africa, the Middle East and Near East, and the Mediterranean.

Pike succeeds Brian Grieveson, who has left ODA after 14 years to take up a partnership in consultants TP O'Sullivan & Partners, London.

(World Water, July 1985)

Sixth World Water Congress on Water Resources in Ottawa/Hull

The International Water Resources Association (IWRA) holds its next and VIth World Water Congress on Water Resources in Ottawa, Canada, 20 May to 3rd June 1988. The main theme is "Water for World Development". Among the co-sponsors are the Ministry of External Affairs Canada, CIDA, Environment Canada, the Ontario Ministry of the Environment, and University of Ottawa. Co-operating sponsors are among others, United Nations. Among the provisional themes are education and training and progress of the International Drinking Water Supply and Sanitation Decade. Write to the Secretariat, VIth World Water Congress on Water Resources, University of Ottawa, 648 King Edward Avenue, Ottawa, Ontario, K1N 6N5, Canada, telephone: 613-231-3902 and telex: 053 3338.

Programme Solidarité Eau

A new form of cooperation with the developing countries under the auspices of the EEC has been launched under the name of Solidarité Eau or Water Network. This involves local municipalities and a great number of non-governmental organizations in Europe. Solidarité Eau encourages twinning between communities in the developing countries with needs of water and sanitation development and the corresponding communities and non-governmental organizations in Europe. This includes water projects for agriculture, community water supply, sanitation and hygiene and other environmental programmes. Write to:

Programme Solidarité Eau
BP-168, 92205
Neuilly, Cedex
France

Tel: (1) 338-60-60
Telex: 212890F.

WaterAid to your aid

WaterAid, the creation of people in the British water industry in order to help the Water Decade efforts, is now coming of age. An ingenious system of stimulating contributions from water users all over the United Kingdom, through very modest additions to millions of monthly water bills and latrines, has become very popular. It now supports projects all over the world. Whether you want to add to them or solicit funds from them, write to: WaterAid, No. 1, Queen Anne's Gate, London SW1H 9BP, U.K. Telephone: (01) 2228111 Telex: 918518. Director is Mr. David Collett, and say, "The UNICEF WATERFRONT sent me!".

The Water Decade Realization Fund, 14 Buckingham Place Road, London S.W. 1W 0QP, Phone 01-828 5961 Telex 8955788. The first ever concerted international approach to multinational companies to encourage them to contribute towards solving problems involving totally unacceptable levels of poverty, deprivation and disease in certain areas of the third world. The fund will assist the countries defined by the World Bank as the low-income group. The Chairman is William Clark of the U.K., President of the International Institute for Environment and Development. Among the trustees are Dr. Peter Bourne, former UNDP Water Decade Coordinator and Mr. Edward Heath, former UK Prime Minister.

PEOPLE

(If not otherwise indicated, all are UNICEF colleagues)

Gustavo Aliaga, Master Driller and Master Helmsman, who several times crossed the Atlantic in his own sailboat almost single-handedly, moved from Angola to Port-au-Prince, Haiti.

Steven (Steve) Allen, Programme Officer for several years in charge of water and sanitation in Burma, moved to Hanoi.

Abu Azad moved from Bangladesh to Iringa, Tanzania, as Project Officer (WES).

Pedro Velazquez Barrón is now Project Officer, Environmental Sanitation in La Paz, Bolivia. A civil engineer specialized in rock mechanics, used to build water supply systems with UNICEF funding in the State of Chiapas, Mexico.

Marcello Bevacqua, of long-standing fame from UNTCD (Togo, El Salvador, Chile) and UNICEF (Regional Water Adviser for West Africa, WES Chief in India), now is Senior Programme Officer in Khartoum.

Robert Gennai is new Master Driller/Instructor in Ouagadougou, Burkina Faso.

Leo Goulet, our long-time water pioneer in Nepal, later in Hanoi, now as hydrogeologist in Cotonou is responsible for UNICEF water inputs in Benin.

Kenneth (Ken) Gray, moved from New Delhi to Khartoum as Project Officer (Chief) of water supply.

Anthony Griffith, who years ago was part of the UNICEF team in Bangladesh, now back with us, this time in Vientiane, Laos, as Project Officer, Water/Sanitation.

Philip Hassrick, new Project Officer, in charge of Water and Environmental Sanitation in Jakarta, formerly dealing with Appropriate Technology in Nairobi.

James R. Hebert, a nutritional epidemiologist, consultant to UNICEF Uganda, specialist in health impact evaluations of water/sanitation, now works with the Mahoney Institute for Health Maintenance of the American Health Foundation in New York.

Claude Massar, after many years in Burundi, helping build lots and lots of spring protection and gravity feed systems, moved north of the border and now continues in Rwanda.

John (Bertie) Mendis, previously with UNICEF in Bangladesh, Burma and New Delhi WES Sections, still in New Delhi, but now as Zone Office Representative.

Christian Pflueger is Project Officer (Field Operations/Water) in Hargeisa, Somalia.

Lawrence (Larry) Robertson is the Water and Sanitation Chief in Kathmandu, Nepal.

Hans Spruijt, a hydrogeologist, is Project Manager in Phnom Penh, Kampuchea.

David Williams, our water man in Zimbabwe, moved from Bulawayo to Harare.

Roger C. Wright is new Project Officer (Water) in Njala, Sierra Leone.

Mohammed Yacoub, hydrogeologist, moved from Cotonou, Benin, to Bossangoa, Central African Republic.

Mladen Zelenika, after several years of managing water well drilling in Southern Lebanon, now Project Officer for the Emergency Water Projects in Sudan.

Parted from UNICEF

Mats Ahnfors, Quetta, Baluchistan, water engineer, worked previously in India, specialist in sub-surface dams.

John Andrews, Senior Water Engineer, Qana, Lebanon.

Thomas Blais, Senior Water Engineer, Qana, Lebanon.

Eric DeBoer, Quetta, Baluchistan, Pakistan, Hydrogeologist.

Michael Durbin, Meiktila, Burma, Master Driller/Instructor, earlier in India.

René Guillaume, Master Driller/Mechanical Technician, Central African Republic, formerly in Kampuchea.

Jan Haakonsen, Hargeisa, Somalia, Project Officer.

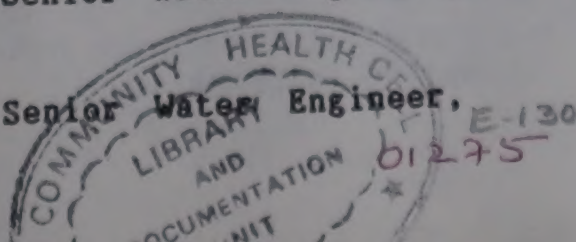
William Lee, Jaipur, India, Drilling Superintendent, many years in Burma.

Richard Marinshaw, Tiddem, Burma, Water Engineer, previously in Nepal.

Rosauro Moreno, Quetta, Baluchistan, Drilling Superintendent, many years theretofore with UNTCD.

Water specialists from Asia and the Pacific available

ESCAP, the Economic and Social Commission for Asia and the Pacific, just has brought out a very useful publication, "Register of ESCAP Regional Water Specialists Available for Technical Cooperation Among Developing Countries". This is a listing with brief personal data of a great number of water specialists in the fields of hydrology, hydraulic structures, water power engineering, irrigation and drainage, flood control, water supply and sanitary engineering, water quality management, groundwater engineering and hydrogeology, water resources planning, water resources systems analysis, dam design and construction, sedimentation and river engineering and, finally, watershed management. Along with the other economic commissions of the United Nations, ESCAP with its water section, headed by Mr. Abelard Manalac, are taking a very active role in promoting the work under the Water Decade. This is very helpful and a good reference point for you anywhere in the world.



Caeterum Censeo Manes Esse Lavandas

For our friends who find difficulties in communicating with our Roman counterparts, we wish urgently to show them the light in this somewhat recent clipping from the International Herald Tribune:

The Latin Challenge

ROME — Whether Latin is a dead language or not, the discussion is very much alive and will go on *ad infinitum et ad nauseam*. As the man in charge of compiling the new edition of a Latin dictionary that will be published by the Vatican Press, the Rev. Reginald Foster, age XXXVIII — an American Carmelite priest in the Latinist section of the Vatican Secretariat of State — eagerly seeks help from Latin experts all over the globe who can offer suggestions as to how to translate certain new words that have emerged in the English language that are tough to put into Latin.

Foster has managed to cope with such expressions as atom bomb (*pyrobolus atomicus*), radar (*radioelectricum instrumentum monitorum*), television (*imaginum transmissio per electricas undas*), central heating (*calefactientis aquae ductus*) and tape recorder (*magnetophonium*). But he is having one devil of a time with a number of other new words.

Domino theory?

"On that one I think I'll take a rain check [*tessera surrogata*]," he moans.

A new expression like petrodollars stumps Foster for a while, but eventually he comes up with a Latin equivalent that will serve until he improves on it — *numi americani petrolio comparati*. Unsure at this point if he wants to put it into the revised dictionary that way, he says he will wait until he has had a chance to talk over petrodollars with some other language buffs.

For the last 15 years Foster has been editor of *Latinitas*, a Vatican quarterly written entirely in Latin. With a circulation of about 1,000 copies, the magazine carries ads that hawk a safety razor (*novacula ab inferendis vulneribus tuta*) or a toothbrush, which comes out as *peniculus dentarius*.

Most of the new words Foster has to tackle are American slang or Americanisms, many of which have not yet entered British English. He is not uptight (*sollicitatur*) about newly minted expressions and takes a cool attitude (*acceptum*) on novel interpretations of old words, weasel words, euphemisms and the language from the Pentagon, Madison Avenue and academia. He is bravely facing the challenge of such words and expressions as discotheque, fuzz, stonewall, freak-out, gay, male chauvinist pig, Amtrak and hard core.

Certain words that are particularly obnoxious to Vatican thinking, like Playboy bunny, wife-swapping and swinger, will not be included in the dictionary. On the other hand, a number of words that could be incompatible with Vatican opinion have still not been ruled out, including Jesus freaks, splitsville and deep throat.

About 10,000 new Latin words have so far been concocted to supplement the language's original 30,000 words. Sometimes Foster, who does not object if you address him with the Latinized version of his first name, Reginaldus, has to spend as much as three or four months working over a single word.

"One word that I've already put just too much time on — and it still gives me daily headaches — is 'soul brother.' You see, 'soul' has a very special meaning in our religion. In addition, we run into the problem of not knowing whether to make it masculine, feminine or neuter gender, since 'brother' in this context could also refer to a woman."

By Nino Lo Bello

International Herald Tribune



Ethel and Jim Grant inaugurate water supply system in Yemen (p. 17)

